

# Postoperative wound manipulation after self-mutilation in borderline personality disorder—a plastic reconstructive challenge

Tobias von Wild · Frank Siemers ·  
Peter Leonard Stollwerck · Felix Hagen Stang ·  
Peter Mailänder · Thomas Namdar

Received: 11 May 2010 / Accepted: 15 January 2011 / Published online: 11 February 2011  
© Springer-Verlag 2011

**Abstract** Borderline personality disorder (BPD) is a mental illness with a prevalence of 1.5% in Western countries. One of the major characteristics of patients with BPD is self-mutilation of any kind. These patients are especially often seen in our clinic since our institution is collaborating with the department of psychiatry that offers supra-regional specialist inpatient hospital treatment of BPD. Types of self-manipulation are various and include slashing and cutting, burning or freezing, bonebreaking, hitting or incorporation of foreign objects. Due to the difficult-to-treat primary disorder, more wound manipulation or self-injury may occur when tensions continue, even after adequate plastic reconstructive surgical treatment and during hospitalization, which represents a challenge for the plastic reconstructive strategy. We describe special problems associated with plastic reconstructive surgery in the light of BPD and self-mutilation and present our algorithm with a series of recommendations for the treatment of such patients as well as three illustrative case reports.

**Keywords** Borderline personality disorder · Self-mutilation · Postoperative wound manipulation · Plastic reconstructive surgery · Reconstructive ladder · Interdisciplinarity

## Introduction

Borderline personality disorder (BPD) is a mental illness with a prevalence of 1.5% in Western countries. One of the major characteristics of patients with BPD is self-mutilation of any kind. These are seen especially often in our clinic since our institution collaborates with the department of psychiatry that offers a supra-regional specialist inpatient hospital treatment of BPD. Types of self-manipulation are various and include slashing and cutting, burning or freezing, bone-breaking, hitting or incorporation of foreign objects. Depending on the kind and location of the wound, therapy regularly ranges from simple wound closure to the necessity of plastic reconstructive surgery techniques. However, even during hospitalisation and after adequate plastic reconstructive surgical treatment, tensions may reappear and lead to repeated self-injury or wound manipulation.

In the surgical management of these injuries, the reconstructive ladder is to be used. Severe postoperative wound manipulation represents a challenge for the plastic reconstructive strategy requiring the generation of an individual treatment plan within an interdisciplinary treatment concept, which takes the primary psychiatric condition into account.

## Materials and methods

Based on three illustrative case reports, we describe the problems connected with the surgical treatment of self-inflicted injuries and wound manipulations for patients with BPD. Patients with BPD partly come from the local

T. von Wild (✉) · F. Siemers · P. L. Stollwerck · F. H. Stang ·  
P. Mailänder · T. Namdar  
Department of Plastic and Hand Surgery, Burn Unit,  
University Hospital Schleswig-Holstein Campus Lübeck,  
Ratzeburger Allee 160,  
23538 Lübeck, Germany  
e-mail: tobias.vonwild@uk-sh.de

population (with a known prevalence of up to 1.5%), and partly, and more often, are referred to our clinic for consiliary treatment by the psychiatric department that offers a supra-regional inpatient treatment for BPD patients in our university hospital. Primary wound care is provided at the accident and emergency department as well as all necessary diagnostics and classification and grading of self-mutilation. Life-threatening injuries, which are rare, are surgically attended to immediately on an interdisciplinary basis. If time allows, psychiatric consiliary advice is sought on admission, unless the patient has been referred by the psychiatric department. Based on the psychiatric history and the plastic reconstructive ladder, an appropriate treatment regime is designed for the patient, and it is tried to assess the risk of postoperative wound manipulation in order to avoid unnecessary complex surgical procedures. The goal is to maintain maximum function. As far as possible, plastic surgery wounds undergo primary surgical treatment. If this is not possible due to wound conditions, there will be a multi-time surgical regime with wound conditioning and secondary capping, either by means of direct wound closure, skin transplantation, or flap surgery. Wounds are protected by plaster of paris postoperatively. If, however, this does not appear sensible owing to the patient's psychiatric instability, a therapeutic alternative to healing without infection is sought while continuously controlling the bandages. If the psychiatric situation allows, inpatient hospital treatment is accompanied by psychiatric consiliary consultation in multiple occupancy patient rooms at the plastic surgery unit in order to ascertain that no further self-mutilation or wound manipulation may occur. In the case of severe self-endangering behaviour, referral to the closed psychiatric ward is indicated following surgical treatment. However, even maximum protection from dangerous tools and close supervision by the nursing staff cannot always avoid further incidents. During the hospital stay, continuous interdisciplinary care is offered involving psychiatrists, physiotherapists, psychologists, religious and social services.

## Results

In spite of the therapeutic measures described above to protect the patients and to achieve psychic mind control, new self-mutilation or manipulation in the area of the existing wounds may happen during an unobserved moment. In a hospital, there are manifold ways and techniques for self-harm which cannot be completely excluded. Based on three case reports, such incidents with the appropriate therapy options are presented.

## Case report 1

A 38-year-old female patient with an 18-year history of self-harm due to BPD, who had been pre-treated in our department, had ignited a deodorant spray bottle during a further episode of inner tension, and being right handed had pointed the flame towards the back of the left hand. The same was done in the area of the palmar arch. When the patient presented at our surgical outpatient unit, we saw a psychically slowed down, but devoted person. While the burn wounds in the area of the arch could be managed conservatively as superficial burn wounds, the full thickness burns on the back of the hand required surgery up to the tendons. Here, the operative treatment consisted of a multiple time procedure with primary debridement including the gliding tissue around the extensor tendon. After a further interval, the defect at the exposed extensor tendons was covered by means of a distant pediculated groin flap (Fig. 1) as a local radialis flap was not possible because of advanced tissue damage caused by former self-mutilations and above-mentioned superficial burn-wound. While changing the bandages daily on the closed ward of the psychiatric department, the wounds healed per primam without irritation. The patient was under continuous therapy. As from postoperative day 3, however, there was a livid colouring and epidermolysis appeared in the area of the pedicle, so that due to a suspected circulatory disorder, wound revision was carried out but without corresponding intraoperative correlate. In the further course, the clinical condition worsened. Close inspection revealed signs of wound manipulation. As it turned out, the patient had incorporated ammoniac out of her BPD emergency kit over several days. Additionally, the patient had inflicted wounds



**Fig. 1** Groin flap to cover exposed tendons of the back hand after self inflicted burns

to the left abdomen next to the pedicle in the same way (Fig. 2). The ensuing necrosis was so distinct that preservation of the flap was not possible and the latter had to be removed. After debridement and again free of irritation, we decided to attempt split skin transplantation and fixation by means of an upholstered pull-on bandage. When taking it off on postoperative day 5, there was good wound healing so that the suture material could be removed. But already on day 6, the patient inflicted burns again with a lighter in the same area (Fig. 3). After cleaning the wound and after consultation with the attending psychiatrist, another surgical intervention was abandoned. Under continuous wound control, secondary healing was attempted.

### Case report 2

A 22-year-old right-handed female patient presented at the emergency unit with signs of an infection of the left hand. Anamnestic and radiological data revealed multiple needles and wires the young woman had inserted into the skin in the interdigital space between thumb and index finger as a result of her BPD and which had caused the infection. The wound was opened operatively in the sense of plastic surgical hand surgery (Fig. 4). Necrotic tissue was excised and the foreign body was removed as far as possible, avoiding further damage (Fig. 5). The resulting wound over the thumb was closed in irritation free intervals by means of flap stretching plastic surgery. Under postoperative protec-



**Fig. 2** Necrosis of the groin flap and abdomen because of incorporated ammoniac



**Fig. 3** Self inflicted burns of the split skin transplant on postoperative day 6

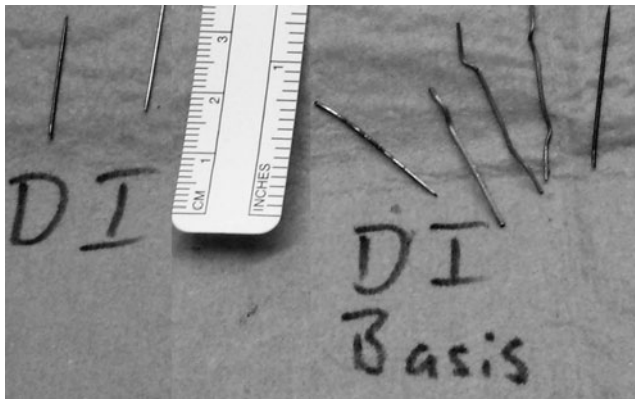
tion and immobilisation with a plaster of paris and daily change of bandages at our specialised ward, wound healing initially was without irritation. However, in the further course, the patient manipulated and opened the suture in the area of the stretched flap (Fig. 6). Due to lack of compliance, further surgical treatment was abandoned.

### Case report 3

A 21-year-old female BPD patient, known to our department for 2 years, presented with multiple incision wounds in the area of the left upper extremities while being right handed (Fig. 7). Involvement of functional structures could be excluded intraoperatively and existing wounds were closed. Besides wound-dressing, immobilisation and protection were achieved with a splint. During her hospital stay, the patient removed the splint and coverage to manipulate the wounds on the back of her hand (Fig. 8). Under close control and daily dressing changes, the wound was left to secondary healing.



**Fig. 4** Intra operative habitus to explore incorporated needles



**Fig. 5** Removed incorporated material

## Discussion

The psychiatric illness of BPD is a complex disease with a prevalence of approximately 1.5%. Among the general population, mainly women are affected [1].

The negative emotional states associated with BPD have been classified into four categories of feelings [2]:

1. Extreme feelings in general
2. Feelings of destructiveness or self-destructiveness
3. Feelings of fragmentation or lack of identity
4. Feelings of victimisation

This disorder is described as a prolonged disturbance of personality function, characterised by depth and variability of moods [3]. “Black and white” thinking, unstable interpersonal relationships, self-image, identity, and behaviour as well as disturbance in the individual's sense of self are typical features. In extreme cases, this disturbance in self-perception can lead to periods of dissociation.

BPD patients tend to experience frequent, strong and long-lasting states of aversive tension, often triggered by



**Fig. 6** Postoperative removal of suture material and wound manipulation of the thumb



**Fig. 7** Multiple self-inflicted cuts of the arm and hand at admission

perceived rejection, being alone or perceived failure [4]. Individuals with BPD show lability, unstableness between anger, depression and anxiety [5], and temperamental sensitivity to emotive stimuli [6]. Their feelings about others often shift from positive to negative, generally after a disappointment or perceived threat of losing someone, including medical staff such as doctors and nurses [7].

Parasuicidal behaviour is defined as intentional self-injury that, although not fatal, may result in tissue damage or risk of death [8]. Self-harming behaviour, with or without intention to die, is one of the core criteria of BPD in the “Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatric Association” (DSM IV-TR), and the management of and recovery from this can be complex and challenging [9, 10]. BPD tend to experience frequent, strong and long-lasting states of physical and emotional tension resulting in self-harm to get rid of it or to find a secondary gain.

Up to 70% of patients with BPD have been reported to inflict non-suicidal self-harm to themselves and even more than 41% of patients commit more than 50 self-mutilations during their life [11, 12].

Socio-economically treatment costs amount up to four billion Euro annually in Germany [13]. Re-manipulated



**Fig. 8** Postoperative removal of suture material and wound manipulation of the backhand



wounds after primary surgical management requiring further surgical intervention cause additional costs during a prolonged hospital stay, which have not been analysed yet. One half of patients are on average hospitalised for 105 days with a mean of 240 days per year. With a likelihood of 80%, rehospitalisation once a year over the next 10 years will be necessary [14–17].

Types of self-manipulation are various and include slashing and cutting, burning or freezing, bone-breaking, hitting, or implementation of foreign objects (Table 1). One thesis on self-injury is to remove aversive stimulus or unpleasant condition of physical and emotional tension. A major problem is seen in conditioning by positive feedback [18]. This negative reinforcement paradigm is supported by research showing that intensity of self-injury can be reduced by increasing the “demand” of a situation. In effect, self-harm is a way to escape otherwise intolerable emotional pain. Studies on self-mutilation have rarely been systematic, but most emphasise that slashing is more common among women than men. While self-cutting patients are most commonly seen in their teens and twenties, slashing can occur at almost any age. Overall, the single most frequent diagnosis of self-mutilation patients is BPD. They often complain of “emptiness” and “tension”. Sudden, rapid mood swings are common. Their acts are most frequently of low lethality [19]. Mutilators cognitively distinguish their mutilative activities from suicide attempts, which makes the patient endure even heaviest pain [20, 21]. Though patients often deny awareness of the act, the length, depth, and site of the wound appear carefully chosen. The act may be ritualistic. Some describe to stop cutting when they have had “enough blood” or just “enough” when a certain level of physiological calm is reached. The patient may then report feeling dramatically better. Blood may have a special significance for the cutter and may be described with great sensuality [14]. Pain is often absent; indeed, one may be able to suture the wounds without anaesthesia while others are frightened of pain in the emergency room (Table 2). The lack of pain

**Table 1** Overview of applied self-mutilation techniques with percent of distribution

| Self-mutilation techniques | Percentage |
|----------------------------|------------|
| Cutting                    | 72         |
| Burning                    | 35         |
| Self-hitting               | 30         |
| Interference wound healing | 22         |
| Hair pulling               | 10         |
| Bone breaking              | 8          |

Multiple mentionings are possible [16]

**Table 2** Subjective intensity of pain during self mutilation by cutting (in %) [16]

| Subjective intensity of pain | Percentage of total |
|------------------------------|---------------------|
| Great                        | 10                  |
| Moderate                     | 23                  |
| None                         | 67                  |

may be explained by a state of dissociation in some self-injurers and to the way in which self-injury serves as a focusing behaviour for others. However, this relief may be followed by self-hatred, disappointment, fear of the consequences, or a sense of “badness” [22–25], which should be handled professionally by the surgeon and psychiatrist.

Virtually every part of the body has been subjected to self-mutilation; the location is limited only by the dexterity of the mutilator. The face, wrists and forearms, hands and fingers, abdomen, thighs, genitals, breasts, umbilicus, Achilles tendon, and soles of the feet have all been cut by patients. The arm remains the most common site, partly because it is easily accessed and partly because scars on the arm can be exposed or concealed at will. The range of items used is widespread. In addition to razor blades and knives, fingernail fragments, bones from food, pans for beating and fire lighters, deodorant spray, and hot material to burn oneself have been identified in the literature [26, 27].

But it is exactly this symptom complex of the underlying psychiatric disease of BPD that makes plastic surgical treatment a challenge. A suppression of the above-mentioned, uncontrollable tensions up to complete wound healing, despite intensive medical and behaviour therapeutic measurements during the hospital stay, is possible only with limitations. A 100% protection against further self-mutilation or wound manipulation, even at a closed psychiatric ward, is not possible.

The often insidious beginning of the disorder is only diffusely to be perceived by outside observers and in the course represents individual and intraindividual problems. Owing to the typical characteristics of BPD, like disturbances of emotional regulation with low emotional sensitivity threshold and high level of excitation at retarded reaching of the base level, adequate dealing in affect is hardly possible. The disturbed interpersonal relationship of closeness and distance, of intensive fright of being alone, or being abandoned, plays an essential role also in the dealings with treating doctors. A momentary person of confidence, be it from the family or the circle of friends or the medical circle, may be instrumentalised either for the own interests but also in the next moment be disregarded by a single action or statement. This disturbed self-perception or external perception in BPD patients should therefore find

attention in the therapeutic strategy as it is known to possibly trigger emotional ambivalence also in third parties, such as doctors. Some patients present themselves at a surgical outpatient unit not for the first time and existing scars tell tales of their medical history. The feeling of frustration of the attending surgeon in this case is not incomprehensible but should not influence rational treatment planning. While keeping a professional distance, competent acute medical basic treatment should be provided, and self-mutilations should be questioned critically in the light of the plastic reconstructive surgical strategy.

As is shown by the above case reports, it is difficult even with longstanding experience in this field to come to an appropriate medical ethical decision for the patient.

Standardised algorithms as described by Rogers et al. are difficult in respect to legal aspects [28]. The authors describe that the staff of the referring psychiatric unit is encouraged to contact the on-call orthopaedic surgery team in order to reduce attendances at the accident and emergency department to a minimum. Wounds without signs of infection are assessed and treated without hospital admission or surgical procedures, if possible, those with signs of infection are treated with antibiotics first. But this means to give over responsibility in medical judgement to non-surgical staff or to diagnose via a telephone call. Every patient should be seen by a (plastic) surgeon to diagnose the extent of trauma. In our opinion, the administration of antibiotics only delays the onset of infection whereas surgical wound debridement and regular dressing changes by experienced and well-trained staff are obligatory. Goal of every surgical treatment should be a maximum of recovery with minimum of secondary tissue damaging. In general, all wounds should be treated by the principles of the reconstructive ladder, judged by the extent of injury, by primary wound closure, skin grafts, and local or free flaps. But especially in patients with borderline personality disorder, it must be decided individually whether additional, tissue damaging technique is proportional to the risk of wound manipulation and the resulting complications. As described in case number 1, covering the wounds by skin grafts did not seem to be the best choice because of the exposed extensor tendons. But even the next reconstructive step with a local flap, such as the radial flap, was not possible because of damage of the donor site. To try to protect patients with BPD against further wound manipulation, plaster casts should be used at all times. Rogers et al. describe a reduction of surgical interventions in patients who had plaster casts applied in an attempt to prevent repeated episodes of foreign body insertion into the same wound or re-opening of wounds (2.2 surgical interventions compared to the overall mean of 4.3) [28]. But as seen in case numbers 2 and 3, protective open plasters are easily detached and closed ones cannot be used as wounds have to

be examined daily. If the patients remain incompliant, at least the effort of trying to protect them from self-mutilation avoids problems arising from an insurance or legal point of view. Especially in BPD patients, the medical expectation has to be adapted and often needs to be reduced to preserve a limb. Less treatment, independent of the reconstructive ladder, might be more with the goal to keep an individual maximal function to the patient. Professionalism is aimed at when dealing with the patient by closely collaborating with the qualified disciplines involved such as psychiatry, psychology, and social medicine as well as sensitising the nursing staff.

## Conclusion

Wound manipulation during inpatient hospital treatment after self-harm poses a high risk in the management of BPD patients. Despite professional treatment, these cannot be excluded safely. There is no guarantee in the treatment of BPD. For each patient, an individual therapy regime has to be designed from the time point of admission until dismissal. It can be a programme that may deviate from traditional plastic reconstructive surgical methods and which should be carried out interdisciplinarily. Self-inflicted injuries within the scope of BPD often necessitate plastic reconstructive measures followed by an inpatient treatment program. If during the inpatient treatment phase, new manipulations with self-injuries occur, differentiated, individually designed procedures are indicated. Our experiences have shown that in this special patient series, standard therapy regimes and algorithms based on the so-called “reconstructive ladder” may not generally be applied. This patient group shows a high risk for continued manipulation manoeuvres, and in individual cases it may be necessary to take unconventional therapeutic steps. For example, if the patient is not vitally endangered, inpatient treatment of open wounds with the intention of secondary wound healing may be terminated prematurely.

## References

1. Lieb K, Zanarini MC, Schmahl C, Linehan MM, Bohus M (2004) Borderline personality disorder. *Lancet* 364(9432):453–461
2. Zanarini MC, Frankenburg FR, DeLuca CJ, Hennen J, Khera GS, Gunderson JG (1998) The pain of being borderline: dysphoric states specific to borderline personality disorder. *Harv Rev Psychiatry* 6(4):201–207
3. Rotenstein OH, McDermut W, Bergman A, Young D, Zimmerman M, Chelminski I (2007) The validity of DSM-IV passive-aggressive (negativistic) personality disorder. *J Pers Disord* 21(1):28–41
4. Stiglmayr CE, Grathwol T, Linehan MM, Ihorst G, Fahrenberg J, Bohus M (2005) Aversive tension in patients with borderline

- personality disorder: a computer-based controlled field study. *Acta Psychiatr Scand* 111(5):372–379
5. Koenigsberg HW, Harvey PD, Mitropoulou V, Schmeidler J, New AS, Goodman M, Silverman JM, Serby M, Schopick F, Siever LJ (2002) Characterizing affective instability in borderline personality disorder. *Am J Psychiatry* 159(5):784–788
  6. Meyer B, Ajchenbrenner M, Bowles DP (2005) Sensory sensitivity, attachment experiences, and rejection responses among adults with borderline and avoidant features. *J Pers Disord* 19(6):641–658
  7. Consumer and family information: borderline personality disorder (2001) *Psychiatr Serv* 52(12):1569–1570
  8. Levy KN, Meehan KB, Weber M, Reynoso J, Clarkin JF (2005) Attachment and borderline personality disorder: implications for psychotherapy. *Psychopathology* 38(2):64–74
  9. Hawton K, Arensman E, Townsend E, Bremner S, Feldman E, Goldney R, Gunnell D, Hazell P, van Heeringen K, House A, Owens D, Sakinofsky I, Traskman-Bendz L (1998) Deliberate self harm: systematic review of efficacy of psychosocial and pharmacological treatments in preventing repetition. *BMJ* 317(7156):441–447
  10. Hawton K, Townsend E, Arensman E et al (2000) Psychosocial versus pharmacological treatments for deliberate self harm. *Cochrane Database Syst Rev* (2):CD001764
  11. Urnes O (2009) Self-harm and personality disorders. *Tidsskr Nor Lægeforen* 129(9):872–876
  12. Oumaya M, Friedman S, Pham A, Abou Abdallah T, Guelfi JD, Rouillon F (2008) Borderline personality disorder, self-mutilation and suicide: literature review. *Encephale* 34(5):452–458
  13. Jerschke S, Meixner K, Richter H, Bohus M (1998) The treatment history of patients with borderline personality disorder in the Republic of Germany. *Fortschr Neurol Psychiatr* 66(12):545–552
  14. Favazza AR (1989) Why patients mutilate themselves. *Hosp Community Psychiatry* 40(2):137–145
  15. Favazza AR, Conterio K (1988) The plight of chronic self-mutilators. *Community Ment Health J* 24(1):22–30
  16. Favazza AR, Conterio K (1989) Female habitual self-mutilators. *Acta Psychiatr Scand* 79(3):283–289
  17. Favazza AR, DeRosear L, Conterio K (1989) Self-mutilation and eating disorders. *Suicide Life Threat Behav* 19(4):352–361
  18. Sneddon I, Sneddon J (1975) Self-inflicted injury: a follow-up study of 43 patients. *Br Med J* 3(5982):527–530
  19. Simpson CA, Porter GL (1981) Self-mutilation in children and adolescents. *Bull Menninger Clin* 45(5):428–438
  20. Van Moffaert M (1989) Management of self-mutilation. Confrontation and integration of psychotherapy and psychotropic drug treatment. *Psychother Psychosom* 51(4):180–186
  21. Van Moffaert MM (1990) Self-mutilation: diagnosis and practical treatment. *Int J Psychiatry Med* 20(4):373–382
  22. Simpson MA (1975) The phenomenology of self-mutilation in a general hospital setting. *Can Psychiatr Assoc J* 20(6):429–434
  23. Rosenthal RJ, Rinzler C, Wallsh R, Klausner E (1972) Wrist-cutting syndrome: the meaning of a gesture. *Am J Psychiatry* 128(11):1363–1368
  24. Gardner DL, Cowdry RW (1985) Suicidal and parasuicidal behavior in borderline personality disorder. *Psychiatr Clin North Am* 8(2):389–403
  25. Pao PN (1969) The syndrome of delicate self-cutting. *Br J Med Psychol* 42(3):195–206
  26. Horesh N, Orbach I, Gothelf D, Efrati M, Apter A (2003) Comparison of the suicidal behavior of adolescent inpatients with borderline personality disorder and major depression. *J Nerv Ment Dis* 191(9):582–588
  27. Horesh N, Sever J, Apter A (2003) A comparison of life events between suicidal adolescents with major depression and borderline personality disorder. *Compr Psychiatry* 44(4):277–283
  28. Rogers BA, Pease F, Ricketts DM (2009) The surgical management of patients who deliberately self-harm. *Ann R Coll Surg Engl* 91(1):59–62